

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. 5-00-023

WASTE DISCHARGE REQUIREMENTS  
FOR  
COUNTY OF KERN *with 15-AA-0050*  
FOR  
OPERATION AND CONSTRUCTION  
ARVIN SANITARY LANDFILL  
KERN COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds that:

1. The County of Kern (hereafter Discharger) owns and operates a municipal solid waste landfill approximately five miles west of the City of Arvin, in Section 31, T31S, R29E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order.
2. The waste management facility contains one existing unlined waste management unit covering 127 acres, as shown in Attachment B, which is incorporated herein and made part of this Order. The facility is comprised of Assessor's Parcel Number (APN) 189-330-20-00-0.
3. The Discharger may expand the waste management unit for the discharge of municipal solid waste to an area of approximately 15 acres within the SW 1/4 of the NW 1/4 of Section 31, T31S, R29E, MDB&M.
4. On 14 August 1992, the Board adopted Order No. 92-163, which prescribes waste discharge requirements for the existing waste management unit. The facility is classified as a Class III landfill which accepts municipal solid waste in accordance with Title 27, California Code of Regulations, §20005, et seq. (Title 27).
5. On 17 September 1993, the Board adopted Order No. 93-200, amending Order No. 92-163 and implementing State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste.
6. This Order updates the waste discharge requirements for the facility in conformance with the California Water Code and Title 27, and the revisions and policies adopted hereunder, and removes the facility from Attachment 1 of Order No. 93-200. This Order also addresses operation of the unlined waste management unit and construction of any lateral expansion or new waste management unit.

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7. Based on 1998 data, the waste management facility receives approximately 267 tons of municipal solid waste per day with an estimated remaining capacity of 550,393 cubic yards as of January 1, 1999. Final capacity is anticipated by September 2001. Waste diversion alternatives are being considered by the Discharger. If one of these alternatives is selected, the anticipated final capacity date would be April 2003.

### SITE DESCRIPTION

8. The facility is in a topographically flat region of the Tulare Lake Hydrologic Basin of the San Joaquin Valley. The native ground surface elevation ranges between approximately 360 feet above mean sea level at the northeast boundary of the facility and 345 feet above mean sea level at the southwest facility boundary. The ground surface slopes approximately 22 feet per mile toward the southwest.
9. The waste management facility is on Quaternary alluvial deposits. The soils underlying the facility are unconsolidated soils, consisting of interbedded gravels, sands, silts, and clays.
10. The measured hydraulic conductivity of the native soils underlying the waste management unit range between  $9 \times 10^{-4}$  and  $4 \times 10^{-7}$  cm/sec.
11. The waste management facility is not within a fault hazard zone. The closest Holocene fault is the White Wolf Fault, approximately five miles to the south. A Richter scale magnitude 7.7 earthquake occurred along the White Wolf Fault in 1952.
12. An abandoned non-hazardous oil field waste processing facility, formerly operated by VenVirotek, is on a 5-acre parcel within the southwest corner of the waste management facility property. An estimated 75,000 cubic yards of impacted soil, and other processing equipment remain. Waste Discharge Requirements Order No. 92-199 was adopted naming both VenVirotek and Kern County as co-dischargers for the waste processing facility.
13. Land within 1,000 feet of the facility is used for cultivated crops and vacant land. A former residence domestic well (California State Well No. 31/29-30P01) is located approximately 150 feet north of the facility. The Discharger has identified well 31/29-30P01 as a potential source of additional water for operations at the waste management facility. Well 31/29-30P01 is shown on Attachment B.
14. The facility receives an average of 6.1 inches of precipitation per year as determined from data collected by the Department of Water Resources. The mean evaporation is 87 inches per year as determined from evaporation data collected by the Department of Water Resources between 1967 and 1978.

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15. The 100-year, 24-hour precipitation event for the facility is estimated to be 2.5 inches, as determined from data furnished by the National Weather Service.
16. The waste management facility is within a 100-year floodplain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060075 1300B, dated 29 September 1986.
17. There are ten municipal, domestic, industrial, or agricultural supply wells within a 1-mile radius of the site. No surface springs or other sources of groundwater supply have been observed.
18. The landfill water supply well (California State Well No. 31/29-31D1) is at the northwest corner of the waste management unit. The well was drilled to a total depth of 320 feet below ground surface. A surface seal reportedly exists to 50 feet below ground surface. The remainder of the borehole is gravel packed.

#### SURFACE AND GROUND WATER CONDITIONS

19. The Board adopted the *Water Quality Control Plan for the Tulare Lake Basin; Second Edition* (hereafter Basin Plan), that designates beneficial uses and contains water quality objectives for all waters of the Basin. This Order implements the Basin Plan.
20. Surface drainage is toward the Kern Lake Bed in the Kern Delta Hydrologic Area (557.10) of the Tulare Lake Basin.
21. There are no identified surface water bodies within one mile of the facility.
22. The first encountered areal groundwater is approximately 59 to 80 feet below the native ground surface. Groundwater elevations range from 280 feet MSL to 288 feet MSL.
23. Monitoring data indicates that the groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as 11 feet.
24. The current direction of groundwater flow beneath the waste management facility is from the northwest toward the south. The average groundwater gradient is approximately 0.004 feet per foot. The groundwater velocity has been reported as seven to ten feet per year. The direction of groundwater flow has varied between southeast and southwest.
25. Monitoring data from upgradient monitoring well AR1-01 indicates that groundwater collected from this well from 1989 through 1998 has a specific electrical conductivity that ranges from 863 to 1,540 micromhos/cm, and Total Dissolved Solids ranging from 507 to

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680 mg/l. The quality of groundwater from AR1-01 exceeds the secondary drinking water standards established by the Department of Health Services for electrical conductivity and Total Dissolved Solids.

Three additional background monitoring wells were installed in November 1997. Wells AR1-06 and AR1-22 were installed upgradient from the landfill. Well AR1-21 was installed sidegradient from the landfill. Wells AR1-21 and AR1-22 monitor first encountered groundwater, while well AR1-06 was completed approximately 80 feet below first encountered groundwater.

Monitoring data from deep upgradient well AR1-06, upgradient well AR1-22, and sidegradient well AR1-21 indicate that groundwater collected from these wells from May 1998 through January 1999 have electrical conductivity ranges from 434 to 617; 4,240 to 5,070; and 644 to 1,034 micromohs/cm, respectively. The range of Total Dissolved Solids in wells AR1-06, AR1-21, and AR1-22 for the same time period is 272 to 294; 3,120 to 3,880; and 436 to 493 mg/l, respectively. The quality of groundwater from AR1-06 meets the secondary drinking water standards established by the Department of Health Services for electrical conductivity and Total Dissolved Solids. The quality of groundwater in well AR1-21 exceeds the secondary drinking water standards for electrical conductivity and Total Dissolved Solids. The quality of groundwater in well AR1-22 exceeds the secondary drinking water standard for electrical conductivity and meets the secondary drinking water standard for Total Dissolved Solids.

26. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal, agricultural, and industrial supply.
27. State Water Resources Control Board Order No. 97-03-DWQ (General Permit No. CAS000001), amended 17 April 1997, specifies waste discharge requirements for discharges of storm water associated with industrial activities, excluding construction activities, and requiring submission of a Notice Of Intent by industries to be covered under the permit. Waste disposal at landfills, including inert disposal facilities, is considered an industrial activity requiring submittal of a Notice Of Intent for coverage under the general permit if storm water is to be discharged off-site. The Discharger submitted a Notice of Intent on 27 August 1997, and a Storm Water Pollution Prevention Plan and Monitoring Program Reporting Requirements on 12 June 1998. Storm water runoff is proposed to be impounded or temporarily detained in an excavation located adjacent to the unlined waste management unit in the SW1/4 of the NW1/4 of Section 31, T31S, R29E, MDB&M.

### WASTE AND SITE CLASSIFICATION

28. The discharge consists of putrescible and nonputrescible municipal solid wastes and nonfriable asbestos. These wastes are classified as 'nonhazardous solid waste' or 'inert waste' using the criteria set forth in Title 27.
29. The site characteristics where the waste management unit is located (see Finding No. 10) do not meet the siting criteria for a Class III landfill contained in §20260(a) and (b)(1) of Title 27. As such, the site is not suitable for the discharge and containment of Class III wastes. Therefore, in order to discharge the wastes described in Finding No. 28, additional waste containment measures are required in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution No. 93-62 for any lateral expansion of the waste management unit.
30. The Discharger may construct a lateral expansion within the waste management facility property. The liner system will need to be designed, constructed, and operated to prevent migration of wastes from the waste management unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the post-closure maintenance period in accordance with the criteria set forth in Title 27 for a Class III landfill, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.

### GROUNDWATER MONITORING

31. The Discharger is required to monitor the groundwater and vadose zone in accordance with Title 27.
32. This Order requires that the groundwater and vadose zone detection monitoring devices be installed, operational, and the first round of samples analyzed prior to the discharge of waste to any waste management unit expansion.
33. Ten groundwater monitoring wells have been installed at the waste management facility for detection monitoring purposes. The existing groundwater detection monitoring system consists of downgradient monitoring wells AR1-02, AR1-03, AR1-04, AR1-05, AR1-23, AR1-24, upgradient monitoring wells AR1-01, AR1-06, AR1-21, and sidegradient well AR1-22. The elevation of static groundwater in wells AR1-01, AR1-02, AR1-03, AR1-04, and AR1-05 exceeds the elevation of the top of screened interval in each well. The elevation of groundwater above the screened interval currently ranges from one to twenty one feet. Excluding well AR1-23, completed approximately ninety-five feet below the elevation of static groundwater when drilled, the elevation of the pump intakes in each

downgradient well is below the elevation of static groundwater by a range of eleven to fifty-six feet.

34. The vadose zone monitoring system for the unlined waste management unit consists of two moisture block/gas probe clusters (AR1-07 and AR1-08), installed at the base of refuse.
35. The Discharger has implemented an Evaluation Monitoring Program for the existing waste management unit, but has not completed the delineation of the vertical and lateral extent of the groundwater degradation in accordance with the time schedule in Title 27. Details of the work accomplished and the work remaining to complete the Evaluation Monitoring Program will be addressed in a subsequent Cleanup and Abatement Order.
36. The Discharger's detection monitoring program for groundwater does not satisfy the requirements contained in Title 27 due to an insufficient number of groundwater monitoring wells and no established concentration limits. A subsequent Cleanup and Abatement Order will require the Discharger to bring the Detection Monitoring Program into full compliance with Title 27 in accordance with an approved time schedule.

#### GROUNDWATER DEGRADATION

37. Groundwater monitoring performed at the landfill has detected volatile organic compounds (VOCs) in samples collected from on-site monitoring wells since 1990. Groundwater analyses have repeatedly detected the following waste constituents at concentrations above water quality objectives (primary Maximum Contaminant Level): benzene; 1,1-dichloroethane; methylene chloride; tetrachloroethene (PCE); trichloroethene (TCE); and vinyl chloride. Other constituents repeatedly detected in wells at concentrations below water quality goals include: acetone; bis (2-ethylhexyl) phthalate; benzyl butyl phthalate; chlorobenzene; chlorodifluoromethane; chlorofluoromethane; chloroform; dichlorodifluoromethane (Freon 12); 1,1-dichloroethene; cis-1,2-dichloroethene; dichlorofluoromethane; 1,2-dichloropropane; ethylbenzene; isopropylbenzene; p-isopropyl toluene; pentane; toluene; 1,1,1-trichloroethane; trichlorofluoromethane (Freon 11); 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and total xylenes.
38. Constituents detected in samples from evaluation monitoring hydropunch borings include: acetone; benzene; bromodichloromethane; bromoform; chloroform; chloromethane; dibromochloromethane; dichlorodifluoromethane (Freon 12); 1,1-dichloroethane; isopropylbenzene; methyl ethyl ketone; methylene chloride; naphthalene; n-propylbenzene; PCE; 1,1,1-trichloroethane; TCE; trichlorofluoromethane (Freon 11); 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and toluene.

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39. Constituents detected in samples from downgradient monitoring well AR1-23, completed 100 feet below the depth of first continuous groundwater, include: chloroform; dichlorodifluoromethane (Freon 12); 1,1-dichloroethane; isopropylbenzene; methylene chloride; tetrachloroethene (PCE); toluene; trichloroethene (TCE); and 1,1,2-trichloro-1,2,2-trifluoroethane.
40. Constituents detected in a sample collected from the landfill water supply well include dichlorodifluoromethane (Freon 12) and methylene chloride. The compounds benzidine and endrin aldehyde were tentatively identified.

**CONSTRUCTION AND ENGINEERED ALTERNATIVE**

41. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
42. Resolution No. 93-62 requires the construction of composite liner systems at municipal solid waste landfills that receive wastes after 9 October 1993. The prescriptive standard for a composite liner system consists of a minimum 40-mil thick (60 mil for HDPE) upper synthetic flexible membrane component and lower soil component of compacted clay a minimum of two feet thick with a hydraulic conductivity not to exceed  $1 \times 10^{-7}$  cm/sec.
43. Resolution No. 93-62 also allows the Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative be of a composite design similar to the prescriptive standard.
44. Section 20080(b) of Title 27 allows the Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with §20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in §20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with §20080(b)(2) of Title 27.
45. Section 13360(a)(1) of the California Water Code allows the Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste

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discharge requirements or orders for the discharge of waste at solid waste disposal facilities.

46. The Discharger has not yet submitted a design plan for an expansion of the Arvin Sanitary Landfill.
47. Prior to an expansion of the existing waste management unit, the Discharger will need to submit for Executive Officer approval, design and construction CQA plans for expansion of the waste management unit.
48. An unsaturated zone monitoring system will need to be installed beneath the composite liner system of any lateral expansion in accordance with §20415 (d) of Title 27.
49. Construction will proceed only after all applicable design, construction plans, and construction quality assurance plans have been approved by the Executive Officer.

#### CEQA CONSIDERATIONS

50. The action to update waste discharge requirements for this facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code §21000, et seq., and the CEQA guidelines, in accordance with Title 14, CCR, §15301, et seq.

#### OTHER CONSIDERATIONS

51. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal municipal solid waste [MSW] regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate Class II or Class III landfill units at which municipal solid waste is discharged. The majority of the federal MSW regulations became effective on the "Federal Deadline", which was 9 October 1993. The USEPA has deemed the State of California to be an approved state, meaning that compliance with the applicable state regulations constitutes compliance with the federal Subtitle D regulations. These requirements implement the appropriate state regulations in lieu of Subtitle D.
52. These requirements implement the prescriptive standard and performance goals of Title 27, California Code of Regulations, §20005 et seq. (Title 27).
53. These requirements implement the Basin Plan.
54. The requirements implement State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste, which implement the federal Subtitle D regulations.



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55. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
56. The Board has notified the Discharger and interested agencies and persons of its intention to update the waste discharge requirements for this facility.
57. In a public hearing, the Board heard and considered all comments pertaining to this facility and discharge.

IT IS HEREBY ORDERED that Order No. 92-163 is rescinded, and Attachment 1 of Order No. 93-200 is amended to delete the Arvin Sanitary Landfill, which is on line No. 55, and that the County of Kern, Kern County Waste Management Department, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted hereunder, shall comply with the following:

**A. PROHIBITIONS**

1. The discharge of 'hazardous waste' at this facility, except waste that is hazardous due only to its friable asbestos content, is prohibited. The discharge of 'designated waste' at this facility is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23 California Code of Regulations, Section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The discharge of wastes outside of a waste management unit or portions of a waste management unit specifically designed for their containment is prohibited.
3. The discharge of solid waste, liquid waste, leachate, or waste constituents to surface waters, ponded water, surface water drainage courses, or groundwater is prohibited.
4. The discharge of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids), except dewatered sewage or water treatment sludge, or on-site generated leachate or landfill gas condensate, above a composite liner as provided in §20220(c) of Title 27, is prohibited.
5. The discharge of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity is prohibited.
6. The discharge of waste within 100 feet of surface waters is prohibited.

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7. The discharge shall not cause the pollution or degradation of groundwater via the release of waste constituents in either liquid or gaseous phase.
8. The discharge of wastes shall not cause the pollution or degradation of any water supply.
9. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
  - a. require a higher level of containment than provided by the unit; or
  - b. are 'restricted hazardous wastes'; or
  - c. impair the integrity of containment structures;is prohibited.
10. The discharge shall not cause any increase in the concentration of waste constituents in soil or other geologic materials outside of the waste management unit if such waste constituents could migrate to waters of the State and cause a condition of degradation, pollution, or nuisance.
11. The discharge of any additional waste to a waste management unit after it is closed is prohibited.

**B. DISCHARGE SPECIFICATIONS**

1. Wastes shall only be discharged to either:
  - a. that portion of an existing waste management unit that was permitted and/or received wastes prior to the Federal Deadline of 9 October 1993; or
  - b. to an area equipped with a composite liner containment system that meets the requirements for both liners and leachate collection and removal systems specified below.

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2. A minimum separation of 5 feet shall be maintained between the base of the wastes and the highest anticipated elevation of underlying groundwater, including the capillary fringe.
3. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, construction, and, after closure, to the minimum amount necessary to irrigate cover vegetation or for other uses approved by the Executive Officer.
4. Leachate collected from the landfill shall be discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the leachate, or discharged on-site to a waste management unit or portion of a waste management unit that has a composite liner and a leachate collection and removal system.
5. Gas condensate collected from any landfill gas control systems installed at the waste management unit and proposed for discharge to land, shall be discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the condensate, or discharged on-site to a waste management unit or portion of a waste management unit that has a composite liner and a leachate collection and removal system.
6. Neither the treatment nor the discharge of wastes shall cause a pollution or nuisance as defined by the California Water Code, §13050.
7. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.

**C. FACILITY SPECIFICATIONS**

1. Waste management units and containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping as a result of a 100-year, 24-hour precipitation event.
2. Precipitation and drainage control systems shall be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under the 100-year, 24-hour precipitation conditions.

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3. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent the ponding of surface water over wastes, and to resist erosion as a result of a 100-year, 24-hour precipitation event.
4. Interim cover placed over wastes discharged to any waste management unit shall be designed and constructed to minimize the percolation of liquids through wastes.
5. Waste management units or portions of waste management units shall be designed, constructed, and operated in compliance with precipitation and flood conditions contained in the Standard Provisions and Reporting Requirements referenced in Provision F.5 below.
6. All drainage control systems shall be designed and constructed to prevent the ponding of water above wastes.
7. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
8. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion.
9. An earthen cover shall be maintained over all but the active disposal area of the waste management unit. This area shall be properly graded and drained to prevent ponding and infiltration. The cover over the waste management unit shall be approved by the California Integrated Waste Management Board in accordance with §20680 of Title 27. Any alternative daily cover material shall be approved by the Executive Officer to ensure that it will be protective of water quality.
10. The Discharger shall submit information that demonstrates for Executive Officer review and approval, that the waste management unit(s) will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment.
11. The Discharger shall submit information that demonstrates for Executive Officer review and approval, that flood protection devices (e.g., floodwalls, dikes) are installed at the waste management unit and will be maintained to prevent inundation or washout and divert surface drainage from the unit for floods with a 100-year return period. If the flood protection devices have not been installed, the

Discharger shall submit a work plan for their installation to the Executive Officer for review and approval.

12. The Discharger shall submit an Interim Drainage Plan demonstrating adequate design, construction, and operation of a facility liquid management system for protection from storm events, including precipitation and drainage controls, consistent with the development of a closure and post-closure maintenance plan and Facility Specifications C.1 through C.8.
13. The Discharger shall immediately notify the Board of any flooding, unpermitted offsite discharge, equipment failure, slope failure, or other change in site conditions, which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
14. The Discharger shall appropriately revise the *Storm Water Pollution and Prevention Plan* and Interim Drainage Plan to reflect site design modifications prior to the discharge of wastes to a newly constructed waste management unit or to an expansion of an existing waste management unit.

#### D. CONSTRUCTION SPECIFICATIONS

1. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of a waste management unit or portion of a waste management unit.
2. Materials used to construct the leachate collection and removal system shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the operating life, closure, and post-closure maintenance period of a waste management unit or portion of a waste management unit.
3. The Discharger shall submit for Executive Officer review and approval prior to construction, design plans and specifications for new waste management units and expansions of existing waste management units that include the following:
  - a) A demonstration that new waste management units and expansions of existing waste management units shall not be located in a wetland, unless demonstrated that:
    - (1) There is no practical alternative;

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- (2) Steps have been taken to achieve no net loss of wetlands, pursuant to §404 of the Federal Clean Water Act; and
- (3) The landfill will not do any of the following:
  - (a) Degrade the wetland;
  - (b) Jeopardize threatened or endangered species or produce adverse modification of a critical habitat protected under the Endangered Species Act of 1973; or
  - (c) Violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.
- b) A Construction Quality Assurance Plan demonstrating that the proposed waste management unit will be constructed according to the approved specifications and plans, and shall provide quality control on the materials and construction practices used in construction and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications; and
- c) A geotechnical evaluation of the area soils, evaluating their use as the foundation layer; and
- d) A vadose zone monitoring system that meets the criteria contained in §20415 (d) of Title 27, and is installed beneath the composite liner system.
- 4. If clay layers are used in a liner system, then the hydraulic conductivities for the clay determined through laboratory methods shall be confirmed by a Sealed Double-Ring Infiltrometer (SDRI) field test, or an equivalent field test method approved by the Executive Officer, of a test pad constructed in a manner duplicating the clay liner construction of the waste management unit or expansion portion of the waste management unit. Test pad construction methods, quality assurance/quality control procedures, and testing shall be in accordance with a construction quality assurance plan approved by the Executive Officer and shall be sufficient to ensure that all parts of the liner meet the hydraulic conductivity and compaction requirements.
- 5. Both the bottom liner and side slope liner of all new waste management units and expansion areas of existing waste management units shall be constructed in accordance with one of the following composite liner designs:

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- a) The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec or less and a minimum relative compaction of 90%. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, shall be a synthetic flexible membrane component that shall be at least 40-mil thick (or at least 60-mil thick if composed of high density polyethylene [HDPE]); or
- b) An engineered alternative liner system that is comprised, in ascending order, of the following:
  - 1) A twelve-inch thick engineered soil foundation layer that shall be constructed of select fine-grained soil materials which shall be compacted in lifts of six inches or less to 90% of maximum dry density and at 0% to 4% wet of optimum moisture content, in accordance with the approved construction quality assurance plan, and shall be compacted to attain a hydraulic conductivity of  $1 \times 10^{-5}$  cm/sec or less, or meet the following gradation criteria:
    - (a) A maximum size of 3/8-inch;
    - (b) At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve; and
    - (c) A gradation series (i.e., well graded) that is amenable to compaction.
  - 2) A nonwoven bottom geotextile, which may be part of the geosynthetic clay layer (GCL).
  - 3) A GCL that shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
  - 4) A 60-mil thick synthetic flexible membrane of HDPE; or
- c) An engineered alternative liner system as provided by §20080(b) and (c) of Title 27, which must be a composite liner that meets the performance goals of the prescriptive design in option a) above, and has been approved by the Executive Officer.

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6. If the Discharger proposes to construct a liner system in which a GCL is placed on top of the subgrade, the subgrade for the bottom and the side slopes of the waste management unit shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
7. Hydraulic conductivities of liner materials shall be determined by laboratory tests using solutions with similar properties as the fluids that will be contained. Hydraulic conductivities of cover materials shall be determined by laboratory tests using water. Hydraulic conductivities determined through laboratory methods shall be confirmed by field testing in accordance with the approved Construction Quality Assurance Plan. Construction methods and quality assurance procedures shall be sufficient to ensure that all parts of the liner and cap meet the hydraulic conductivity and compaction requirements.
8. All new waste management units or lateral expansions of existing waste management units shall have a blanket-type leachate collection and removal system. The leachate collection and removal system shall be designed, constructed, maintained, and operated to collect twice the anticipated daily volume of leachate generated by the waste management unit. The leachate collection and removal system shall be designed and operated to maintain less than a 30 cm depth of leachate over the liner.
9. Leachate generated by any waste management unit or portion of a waste management unit shall not exceed 85% of the design capacity of the leachate sump. If leachate generation exceeds this value, or if the depth of fluid in the leachate collection and removal system exceeds 30 cm, or if the monitoring reveals substantial or progressive increases above the design anticipated daily volume of leachate generated by the waste management unit or portion of the waste management unit, the Discharger shall immediately notify the Board in writing **within seven days**. The notification shall include a timetable for remedial or corrective action necessary to reduce leachate production.
10. Following the completion of construction of a waste management unit or portion of a waste management unit, and prior to discharge onto the newly constructed liner system, a construction report shall be submitted for Executive Officer review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.



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The report for the waste management unit shall include as a minimum, but not be limited to, the following:

- a) Test results on the chemical and geotechnical properties of materials used in the containment structure, as specified in these waste discharge requirements.
  - b) Test results on the permeability of the clay liner if the prescriptive standard clay layer is used in the liner system.
  - c) Test results on the compatibility of the waste with the liner system.
  - d) Construction quality assurance and quality control procedures and results for all aspects of liner construction.
  - e) A geologic map and geologic cross-sections which show mappable lithologic units and structural features in relation to the waste management unit.
11. Partial or final closure of new, existing, or portions of a classified waste management unit shall be in compliance with the applicable provisions of Title 27. Classified waste management units or portions of waste management units shall be closed in accordance with a closure and post-closure maintenance plan approved by the Executive Officer, and closure waste discharge requirements adopted by the Board. In addition to the applicable provisions of Title 27, the closure and/or the post-closure maintenance plan shall include the following:
- a) A final cover design with a minimum 1-foot thick erosion resistant layer;
  - b) An estimate of the largest area of the waste management unit(s) ever requiring a final cover at any time during the active life of the unit(s);
  - c) An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility;
  - d) Initiation of closure activities within 30 days of final waste receipt, or within one year of receipt of most recent waste if additional capacity remains;
  - e) Completion of closure activities within 180 days of the beginning of closure activities;

- f) Notifying the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned uses described in the post-closure maintenance plan.
- 12. The Discharger shall notify the Executive Officer that a closure and post-closure maintenance plan has been prepared in accordance with Construction Specification D. 11 and placed in the operating record by the date of initial receipt of waste at any new waste management unit or lateral expansion of any existing waste management unit.
- 13. Closure shall not proceed in the absence of closure waste discharge requirements.

#### E. DETECTION MONITORING SPECIFICATIONS

- 1. The Discharger shall submit a groundwater detection monitoring report demonstrating compliance with Title 27 for the existing waste management unit and any waste management unit expansion. The program is subject to approval by the Executive Officer.
- 2. The Discharger shall submit a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards and the analysis of unfiltered samples, for approval by the Executive Officer.
- 3. The Discharger shall comply with the detection monitoring provisions of Title 27 for groundwater and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. 5-00-023. Detection monitoring for a new waste management unit or an expansion of an existing waste management unit shall be installed, operational, and the first round of samples collected prior to the discharge of wastes.
- 4. The Water Quality Protection Standard, as defined in §20390 of Title 27, shall consist of constituents of concern, their concentration limits, the point of compliance, and all water quality monitoring points. Constituents of concern shall include all waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the landfill. Concentration limits shall consist of the background concentrations of each

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constituent of concern established in accordance with a data analysis method that meets the applicable criteria of §20415(e) of Title 27.

5. The Discharger shall comply with the Water Quality Protection Standard which is specified in Monitoring and Reporting Program No. 5-00-023 and the Standard Provisions and Reporting Requirements, dated August 1997, which are attached to and made part of this order.
6. Organic compounds that are not naturally occurring have a background value of zero. The Water Quality Protection Standard for volatile organic compounds shall be taken as the detection limit of the analytical method used (i.e., USEPA Methods 8260 and 8270). Evidence of exceeding the standard occurs when the constituent is detected by the appropriate method.
7. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. 5-00-023.
8. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. 5-00-023 and §20415(e) of Title 27.
9. Methane and other landfill gases shall be adequately vented, removed from the waste management unit, or otherwise controlled to prevent adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the vadose (unsaturated) zone.

**F. PROVISIONS**

1. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a waste management unit, and the manner and location of the discharge. The Discharger shall maintain such records until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Board and of the State Water Resources Control Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be properly stored for future reference.

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2. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel upon request.
3. The Discharger shall comply with all applicable provisions of Title 27 that are not specifically referred to in this Order.
4. The Discharger shall comply with Monitoring and Reporting Program No. 5-00-023, which is incorporated into and made part of this Order. This compliance includes, but is not limited to monitoring of: the maintenance of waste containment facilities, precipitation and drainage controls, the groundwater monitoring system, leachate from the waste management unit(s), and the vadose zone and surface water monitoring systems throughout the active life of the waste management unit and the post-closure maintenance period.
5. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements, dated August 1997, which are hereby incorporated into this Order.
6. A violation of any of the applicable portions of the Standard Provisions and Reporting Requirements or the Monitoring and Reporting Program is a violation of these waste discharge requirements.
7. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices shall be operated and maintained so that they perform to design specifications throughout the life of the monitoring program.
8. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order as required by §13750 through §13755 of the California Water Code.
9. The Discharger shall submit documentation to the Executive Officer that all persons who own or reside on the land that directly overlies any portion of the contaminant plume that has migrated off-site have been notified.
10. The Discharger shall have the continuing responsibility to assure the protection of the beneficial uses of ground and surface waters from gases and leachate generated by discharged waste during the active life, closure and post-closure maintenance

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period of the waste management unit(s) and during the subsequent use of the property for other purposes.

11. In the event of any change in control or ownership of the land or waste discharge facilities described herein, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.
12. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Board, and a statement. The statement shall comply with the signatory requirements contained in Reporting Requirements No. 5 of the Standard Provisions and Reporting Requirements and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Board.
13. The Discharger shall notify the Board in writing of any proposed change in ownership or responsibility for construction or operation of the waste management unit. The Discharger shall also notify the Board of a material change in the character, location or volume of the waste discharge and of any proposed expansions or closure plans. This notification shall be given **90 days** prior to the effective date of the change and shall be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these waste discharge requirements.
14. The Discharger shall, by **30 April of each year**, submit for approval by the Executive Officer, plans with detailed cost estimates and a demonstration of assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit. The Discharger shall provide the assurances of financial responsibility to the California Integrated Waste Management Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6. The assurances of financial responsibility shall provide that funds for corrective action shall be available to the Regional Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.

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15. The Discharger shall, by **30 April of each year**, submit for approval by the Executive Officer, a demonstration of assurances of financial responsibility to ensure closure and post-closure maintenance of each waste management unit in accordance with its approved closure and post-closure maintenance plans. The Discharger shall provide the assurances of financial responsibility to the California Integrated Waste Management Board as required by Title 27 CCR, Division 2, Subdivision 1, Chapter 6. The assurances of financial responsibility shall provide that funds for closure and post-closure maintenance with respect to water quality shall be available to the Regional Board upon the issuance of any order under California Water Code, Division 7, Chapter 5. The Discharger shall adjust the cost annually to account for inflation and any changes in facility design, construction, or operation.
16. If a single mechanism of financial assurance is used for both corrective action and closure and post-closure maintenance, the financial assurance must be sufficient for both requirements.
17. The Board will review this Order periodically and will revise these waste discharge requirements when necessary.
18. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:


<u>Task</u>	<u>Compliance Date</u>
(a) Submit for Executive Officer review and approval, a demonstration that the waste management unit will not restrict the 100-year flood, reduce the storage capacity of the floodplain, or result in washout of solid waste. (Facility Specification C.10)	30 April 2000
(b) Submit Interim Drainage Plan (Facility Specification C.12)	30 April 2000

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<u>Task</u>	<u>Compliance Date</u>
(c) Submit for Executive Officer review and approval, design plans and specifications for new waste management units and expansions of existing waste management units. (Construction Specification D.3)	Prior to Construction
(d) Submit for Executive Officer review and approval, a revised closure and post-closure maintenance plan. (Construction Specification D.11)	No Later Than One Year Prior to the Anticipated Date of Closure
(e) Submit Sample Collection and Analysis Plan (Detection Monitoring Specification E.2)	30 April 2000

I, GARY M. CARLTON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 28 January 2000.

  
GARY M. CARLTON, Executive Officer

RCS/REH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. 5-00-023  
FOR  
COUNTY OF KERN  
KERN COUNTY WASTE MANAGEMENT DEPARTMENT  
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Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the Standard Provisions and Reporting Requirements dated August 1997, is ordered by Waste Discharge Requirements Order No. 5-00-023.

Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes noncompliance with the Waste Discharge Requirements and with the California Water Code, which can result in the imposition of civil monetary liability.

**A. REQUIRED MONITORING REPORTS**

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	See Table I
2. Annual Monitoring Summary Report (Standard Provisions and Reporting Requirements)	Annually
3. Unsaturated Zone Monitoring (Section D.2)	See Table II
4. Leachate Monitoring (Section D.3)	See Table III
5. Facility Monitoring (Section D.5)	As necessary
6. Response to a Release (Standard Provisions and Reporting Requirements)	As necessary

**B. REPORTING**

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the Discharger



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shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. Data shall also be submitted in a digital database format acceptable to the Executive Officer. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. A short discussion of the monitoring results, including notations of any water quality violations, shall precede the tabular summaries.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to Board staff in accordance with the following schedule for the calendar period in which samples were taken or observations made. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to Board staff.

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Quarterly	Last Day of Month	by Quarterly Schedule
Quarterly	Quarterly	31 March 30 June 30 September 31 December	31 May 31 August 30 November 28 February
Semi-Annually	Semi-Annually	30 June 31 December	31 August 28 February
Annually	Annually	31 December	30 April

The annual report to be submitted to Board staff shall contain both tabular and graphical summaries of the monitoring data obtained during the previous twelve months, so as to show historical trends at each well. The report shall include a discussion of compliance with the waste discharge requirements and the water quality protection standard.

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

For each waste management unit, the water quality protection standard consists of a list of constituents of concern and monitoring parameters, concentration limits for each constituent of concern, the point of compliance, and all monitoring points. The Discharger shall submit a proposed water quality protection standard for review and approval in accordance with a Cleanup and Abatement Order which will be adopted following adoption of this Order. The Executive Officer shall review the data and the proposed water quality protection standard in determining the final water quality protection standard for each monitored medium.

The report shall:

- a) Identify all distinct bodies of surface and ground water that could be affected in the event of a release from a waste management unit or portion of a waste management unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the waste management facility.
- b) Include a map showing the monitoring points and background monitoring points for the surface, saturated, and unsaturated zones and showing the point of compliance in accordance with §20405 of Title 27.
- c) Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the water quality protection standard.

### 2. Constituents of Concern

The constituents of concern are the waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit. The constituents of concern for all waste management units at the facility are those listed in Table VI. The Discharger shall monitor all constituents of concern in Table VI every five years, or more frequently as required in accordance with a Corrective Action Program.

**a. Monitoring Parameters**

Monitoring parameters are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through V for the specified monitored medium.

**3. Concentration Limits**

The concentration limits for each constituent of concern are as follows:

- a. for naturally occurring constituents of concern, the concentration limit shall be the calculated statistical concentration limit.
- b. for anthropogenic (not naturally occurring) constituents, which have no natural and, therefore, no background values, the concentration limit (water quality protection standard) shall be the detection limit of the analytical method(s) used.

The Discharger shall use the data analysis method approved by the Executive Officer, and the groundwater quality data obtained from the detection monitoring program to update the concentration limits annually in accordance with §20415(e)(10)(B) of Title 27. The Discharger shall submit the updated concentration limits to the Executive Officer for review and approval in the annual monitoring report. The Discharger shall be allowed to make a demonstration to establish concentration limits based upon reference to historical data in accordance with §20415(e)(10)(A) of Title 27. The demonstration is subject to the statistical analysis criteria contained in §20415(e) of Title 27, and shall be reviewed and approved by the Executive Officer. If the demonstration is approved, the Discharger shall submit the historical concentration limits to the Executive Officer for review and approval in the annual monitoring report. For successive annual monitoring reports having the same constituent concentration limits as the previous year, the Discharger shall include a demonstration to justify the unchanged values. Any annual demonstrations shall be reviewed and approved by the Executive Officer.

**4. Point of Compliance**

The point of compliance for each waste management unit is the vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit.

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a. **Monitoring Points**

All downgradient wells established for groundwater monitoring shall constitute the monitoring points for the groundwater quality protection standard. All approved monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through IV.

5. **Compliance Period**

The compliance period for each waste management unit shall be the number of years equal to the active life of the waste management unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

D. **MONITORING**

The Discharger shall comply with the detection monitoring provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specifications E.2 and E.3 of waste discharger requirements Order No. 5-00-023. Detection monitoring for a new facility, a new waste management unit, or an expansion of an existing waste management unit shall be installed, operational, and the first round of samples collected **prior to** the discharge of wastes. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards and the analysis of unfiltered samples, that are acceptable to the Executive Officer.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table VI.

The Discharger may use alternative analytical test methods, including new EPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

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**1. Groundwater**

The Discharger shall install and operate a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Plan approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semi-annually, including the times of highest and lowest elevations of the water levels in the wells. The groundwater elevation in each well shall be measured prior to purging, each time the well is sampled. Groundwater elevations in wells that monitor the same waste management facility shall be measured within a period of time short enough to avoid temporal variations in flow which could preclude accurate groundwater flow rate and direction determination. Additionally, hydrographs of each well shall be prepared showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

Groundwater samples shall be collected from the point of compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I. In each monitoring report, all monitoring parameters shall be graphed so as to show historical trends at each well. In lieu of graphs in each semiannual monitoring report, the Discharger may include a detailed discussion of constituent trends. The discussion shall include listings of constituents displaying increasing and/or decreasing trends; newly identified detections of VOCs; newly identified detections of inorganic constituents at or above established concentration limits; and detections of constituents at or above MCLs. The monitoring parameters shall also be evaluated with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram or a Piper graph. Stiff diagrams or Piper graphs shall be prepared for all groundwater monitoring wells every five years. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

## **2. Unsaturated Zone Monitoring**

The Discharger shall install and operate an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a detection monitoring plan approved by the Executive Officer. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. Samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

The pan lysimeters shall be checked monthly for liquid and monitoring shall include the volume of liquid recovered. Unsaturated zone monitoring reports shall be included with the corresponding semi-annual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the water quality protection standard.

## **3. Leachate Monitoring**

All waste management unit leachate collection and removal system sumps shall be inspected weekly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled and analyzed for the constituents listed in Table III. Leachate monitoring shall be conducted as specified in Table III in accordance with the methods listed in Table VI. The constituents of concern list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured weekly and reported as Leachate Flow Rate (in gallons/day).

Upon detection of any leachate seeps at the unlined waste management unit, the leachate shall be sampled and analyzed for the constituents listed in Table III in accordance with the methods listed in Table VI. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day).

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**4. Facility Monitoring**

**a. Facility Inspection**

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations defined in the Standard Provisions and Reporting Requirements (Definition 24). Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented.

**b. Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage within 7 days following *major storm events*. Necessary repairs shall be completed within 30 days of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by:

  
GARY M. CARLTON, Executive Officer

28 January 2000

(Date)

RCS/REH

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**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	°F	Semi-annual
Specific Conductance	µmhos/cm	Semi-annual
pH	pH units	Semi-annual
Turbidity	Turbidity units	Semi-annual
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Semi-annual
Chloride	mg/L	Semi-annual
Carbonate	mg/L	Semi-annual
Bicarbonate	mg/L	Semi-annual
Nitrate - Nitrogen	mg/L	Semi-annual
Sulfate	mg/L	Semi-annual
Calcium	mg/L	Semi-annual
Magnesium	mg/L	Semi-annual
Potassium	mg/L	Semi-annual
Sodium	mg/L	Semi-annual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semi-annual
<b>Constituents of Concern (see Table VI)</b>		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8150)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	5 years



TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Monitoring Parameters</b>		
Volatile Organic Compounds (USEPA Method TO-14)	$\mu\text{g}/\text{cm}^3$	Semi-annual
Methane	%	Quarterly

PAN LYSIMETERS (or other vadose zone monitoring device)

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Specific Conductance	$\mu\text{mhos}/\text{cm}$	Semi-annual
pH	pH units	Semi-annual

Monitoring Parameters

Total Dissolved Solids (TDS)	mg/L	Semi-annual
Carbonate	mg/L	Semi-annual
Bicarbonate Alkalinity	mg/L	Semi-annual
Chloride	mg/L	Semi-annual
Sulfate	mg/L	Semi-annual
Nitrate - Nitrogen	mg/L	Semi-annual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	$\mu\text{g}/\text{L}$	Semi-annual

Constituents of Concern (see Table VI)

Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	$\mu\text{g}/\text{L}$	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	$\mu\text{g}/\text{L}$	5 years
Chlorophenoxy Herbicides (USEPA Method 8150)	$\mu\text{g}/\text{L}$	5 years
Organophosphorus Compounds (USEPA Method 8141)	$\mu\text{g}/\text{L}$	5 years

MONITORING AND REPORTING PROGRAM  
 ORDER NO. 5-00-023  
 COUNTY OF KERN  
 KERN COUNTY WASTE MANAGEMENT DEPARTMENT  
 FOR OPERATION AND CONSTRUCTION  
 ARVIN SANITARY LANDFILL  
 KERN COUNTY

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TABLE III  
 LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Total Flow	Gallons	Monthly
Flow Rate	Gallons/Day	Monthly
Specific Conductance	µmhos/cm	Monthly
pH	pH units	Monthly
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate Alkalinity	mg/L	Quarterly
Chloride	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Quarterly
<b>Constituents of Concern (see Table VI)</b>		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8150)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	5 years

**TABLE IV**

**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Surrogates for Metallic Constituents:**

pH  
Total Dissolved Solids  
Specific Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

**Constituents included in VOC:**

**USEPA Method 8260**

Acetone  
Acrylonitrile  
Benzene  
Bromochloromethane  
Bromodichloromethane  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chlorodifluoromethane  
Chlorofluoromethane  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
Dichlorodifluoromethane (CFC-12)  
Dichlorofluoromethane  
trans-1,4-Dichloro-2-butene  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)  
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)  
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
cis-1,3-Dichloropropene  
trans-1,3-Dichloropropene  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Isopropylbenzene

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING  
Continued

p-Isopropyltoluene  
Methyl bromide (Bromomethene)  
Methyl chloride (Chloromethane)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl tert-Butyl Ether  
4-Methyl-2-pentanone (Methyl isobutylketone)  
Pentane  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC-11)  
1,2,3-Trichloropropane  
1,2,4-Trimethylbenzene  
1,3,5-Trimethylbenzene  
Vinyl acetate  
Vinyl chloride  
Xylenes

TABLE V

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):                      USEPA Method

Aluminum	6010
Antimony	6010
Barium	6010
Beryllium	6010
Cadmium	6010
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7061
Lead	7421
Mercury	7470
Nickel	7520
Selenium	7741
Thallium	7841
Cyanide	9010
Sulfide	9030

**Volatile Organic Compounds:**

USEPA Method 8260

Acetone  
Acetonitrile (Methyl cyanide)  
Acrolein  
Acrylonitrile  
Allyl chloride (3-Chloropropene)  
Benzene  
Bis(2-ethylhexyl) phthalate  
Bromochloromethane (Chlorobromomethane)  
Bromodichloromethane (Dibromochloromethane)  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chlorodifluoromethane  
Chlorofluoromethane  
Chloroethane (Ethyl chloride)

TABLE V  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL  
METHODS  
Continued

Chloroform (Trichloromethane)  
Chloroprene  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC-12)  
Dichlorofluoromethane  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1-Dichloroethylene (1,1-Dichloroethene; Vinylidene chloride)  
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)  
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1-Dichloropropene  
cis-1,3-Dichloropropene  
trans-1,3-Dichloropropene  
Ethylbenzene  
Hexachlorobutadiene  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Isodrin  
Isopropylbenzene  
p-Isopropyltoluene  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl methacrylate  
Methyl tert-Butyl Ether  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Pentane  
Propionitrile (Ethyl cyanide)

TABLE V  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL  
METHODS  
Continued

Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1 -Trichloroethane, Methylchloroform  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC-11)  
1,2,3-Trichloropropane  
1,2,4-Trimethylbenzene  
1,3,5-Trimethylbenzene  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

**Semi-Volatile Organic Compounds:**

**USEPA Method 8270 - base, neutral, & acid extractables**

Acenaphthene  
Acenaphthylene  
Acetophenone  
2-Acetylaminofluorene (2-AAF)  
Aldrin  
4-Aminobiphenyl  
Anthracene  
Benzo[a]anthracene (Benzanthracene)  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Benzyl alcohol  
alpha-BHC  
beta-BHC  
delta-BHC  
gamma-BHC (Lindane)  
Bis(2-chloroethoxy)methane  
Bis(2-chloroethyl) ether (Dichloroethyl ether)  
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)  
4-Bromophenyl phenyl ether  
Butyl benzyl phthalate (Benzyl butyl phthalate)

TABLE V  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL  
METHODS  
Continued

Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
3,3'-Dichlorobenzidine  
2,4-Dichlorophenol  
2,6-Dichlorophenol  
Dieldrin  
Diethyl phthalate  
p-(Dimethylamino)azobenzene  
7,12-Dimethylbenz[a]anthracene  
3,3'-Dimethylbenzidine  
2,4-Dimethylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin



TABLE V  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL  
METHODS  
Continued

Endrin aldehyde  
Ethyl methacrylate  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorobutadiene  
Hexachlorocyclopentadiene  
Hexachloroethane  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isophorone  
Isosafrole  
Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene  
Methyl methanesulfonate  
2-Methylnaphthalene  
Naphthalene  
1,4-Naphthoquinone  
1-Naphthylamine  
2-Naphthylamine  
o-Nitroaniline (2-Nitroaniline)  
m-Nitroaniline (3-Nitroaniline)  
p-Nitroaniline (4-Nitroaniline)  
Nitrobenzene  
o-Nitrophenol (2-Nitrophenol)  
p-Nitrophenol (4-Nitrophenol)  
N-Nitrosodi-n-butylamine (Di-n-butyl nitrosamine)  
N-Nitrosodiethylamine (Diethyl nitrosamine)  
N-Nitrosodimethylamine (Dimethyl nitrosamine)  
N-Nitrosodiphenylamine (Diphenyl nitrosamine)  
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propyl nitrosamine)  
N-Nitrosomethylethylamine (Methylethyl nitrosamine)  
N-Nitrosopiperidine  
N-Nitrosopyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene

TABLE V  
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL  
METHODS  
Continued

Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
1,2,4-Trichlorobenzene  
2,4,5-Trichloropheno  
1,2,4,6-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**Chlorophenoxy Herbicides:**

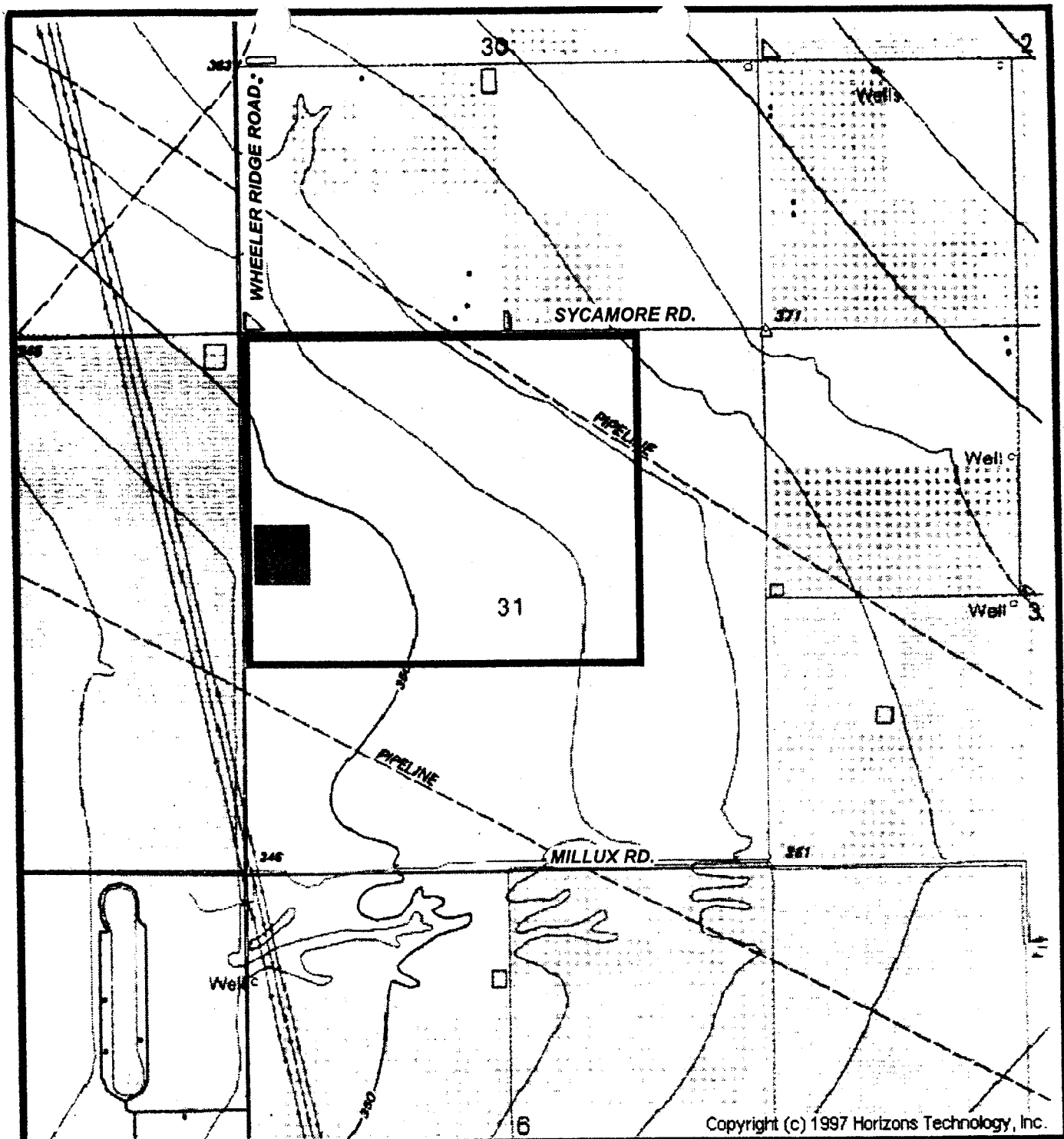
**USEPA Method 8150**

2,4-D (2,4-Dichlorophenoxyacetic acid)  
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)  
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)  
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

**Organophosphorus Compounds:**



**USEPA Method 8141**

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Dimethoate  
Disulfoton  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate

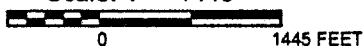


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### LEGEND

-  Waste Management Facility Boundary
-  VenVirotek Lease

Scale: 1" = 1445'



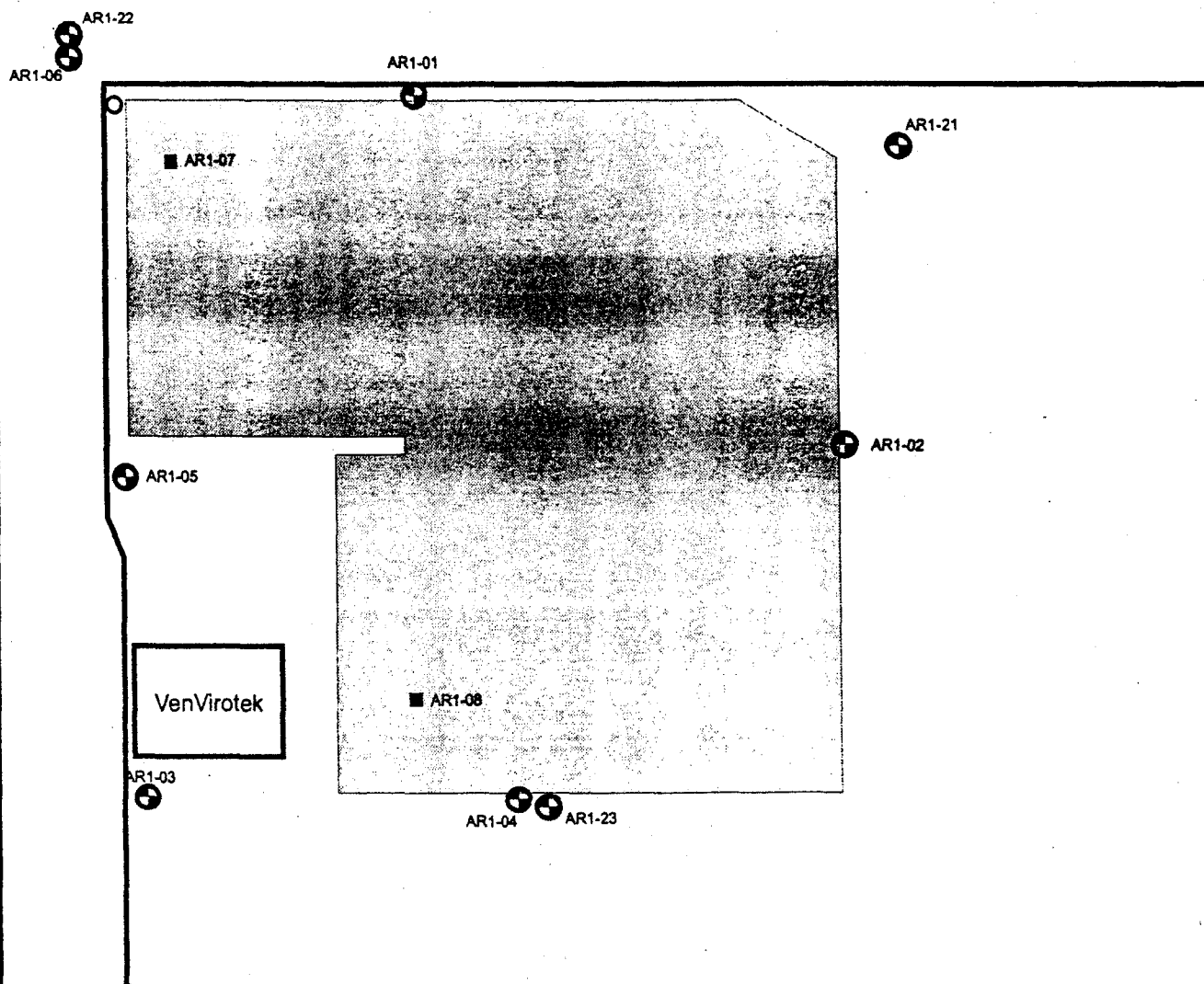
BASE MAP SOURCE: USGS 7.5' WEED PATCH QUADRANGLE

(RCS)






### ATTACHMENT A

## FACILITY LOCATION MAP ARVIN SANITARY LANDFILL COUNTY OF KERN

(2/25/98)



### LEGEND

-  Existing Monitoring Well
-  Existing Vadose Zone Monitoring Point
-  Landfill Water Supply Well
-  Waste Management Facility Boundary
-  Waste Management Unit

Approximate Scale: 1" = 600'

0 600 FEET



### ATTACHMENT B

SCHEMATIC REPRESENTATION  
of the

ARVIN SANITARY LANDFILL

COUNTY OF KERN

(2/25/98)

## INFORMATION SHEET

ORDER NO. 5-00-23  
COUNTY OF KERN  
FOR OPERATION AND CONSTRUCTION  
ARVIN SANITARY LANDFILL  
KERN COUNTY

The County of Kern owns and operates the Arvin Sanitary Landfill. The facility was originally operated as a burn dump as early as 1949, and was converted to a landfill in August 1971. Based on 1998 data, the waste management facility receives approximately 267 tons of municipal solid waste per day with an estimated remaining capacity of 550,393 cubic yards. Final capacity is anticipated by September 2000. It is approximately five miles west of Arvin and receives waste from the greater Arvin area, portions of Bakersfield, the communities of Lamont, Weedpatch, Greenfield, and Pumpkin Center, and the Lebec transfer station.

A 127-acre unlined waste management unit exists within the 170-acre waste management facility property. The site is within a 100-year floodplain according to FEMA maps. Soils underlying the site are unconsolidated, consisting of interbedded gravels, sands, silts, and clays.

Depth to groundwater is approximately 59 to 80 feet below the native ground surface, and exhibits a gradient toward the south. Monitoring data from one background well indicates that groundwater has a total dissolved solid range of 507 to 680 mg/l, which exceeds the secondary drinking water standard established by the Department of Health Services. Groundwater monitoring has detected volatile organic compounds at concentrations in excess of the primary maximum contaminant levels for drinking water.

Evaluation monitoring to determine the extent of groundwater degradation has been implemented at the site. Completion of the evaluation monitoring program, modification of the detection monitoring program for full compliance with Title 27, and implementation of a corrective action program will be addressed in a subsequent Cleanup and Abatement Order.

This Order implements groundwater detection monitoring and operation of the facility in accordance with the provisions contained in Title 27.

RCS/REH:1/28/2000